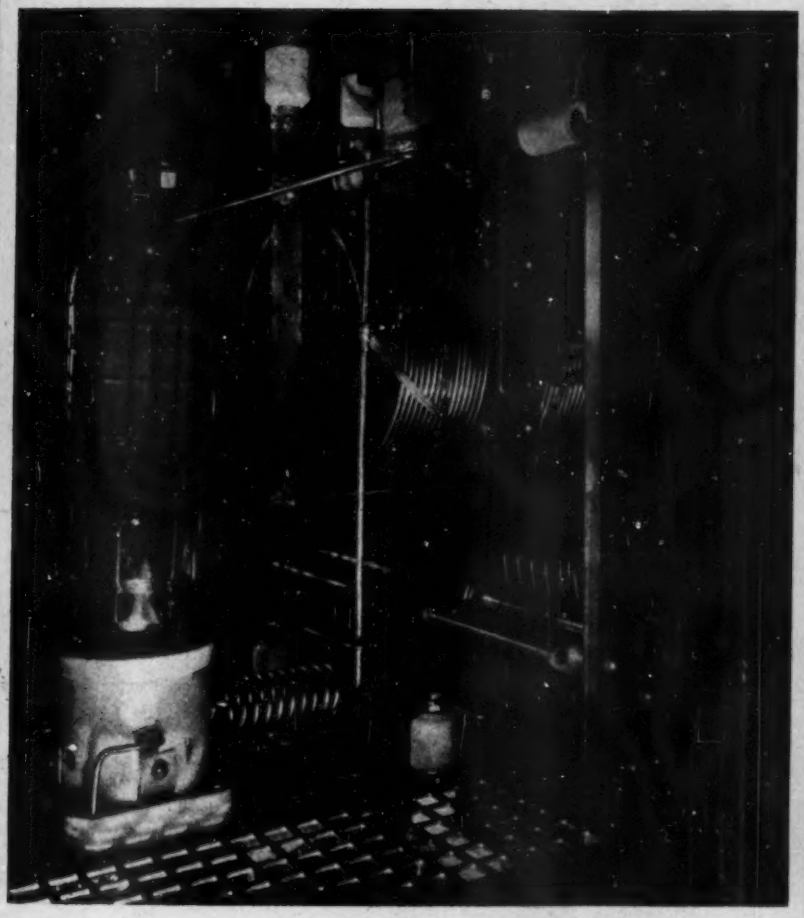
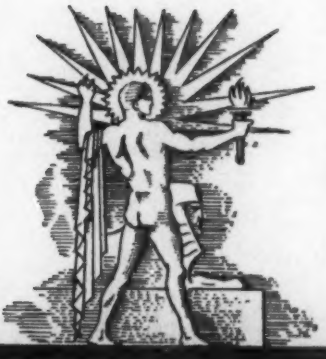
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •





JUNE 22, 1935

Weapon Against Crime

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A SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

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The Weekly Summary of Current Science

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Edited by WATSON DAVIS

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DO YOU KNOW?

More than 80 kinds of air conditioning units are being sold.

Coral reefs near Jamaica are to be studied by a scientist who will take undersea pictures of them.

Indian women of high rank in ancient southern Mexico sometimes acted as leaders, even in battle.

The Ivicene dog, a greyhound of the Balearic Islands, has been called the oldest breed of dog living.

Timber wolves have been known to follow the same "beat" for years in a hunting territory of perhaps 50 square miles.

An anatomist traveling on the Saguenay and St. Lawrence Rivers in Canada one day last summer observed not less than 800 white whales.

Individual lockers in cold storage plants, usually rented for a few cents a day, are a new idea to aid farmers and others who wish to store fruit, vegetables, and meat.

It takes 15 to 20 generations usually to produce varieties of vegetables resistant to disease, but government scientists are speeding up the process by growing three or four generations in one year.

England has its first post graduate medical school, opened formally in May of this year.

Antelopes of India called blackbuck have the most corkscrew-like horns found on any animal.

A so-called "fixed" star is so far away that its position in relation to other stars seems never to change.

In a Michigan ice storm in 1922, telephone wires were left so loaded that they weighed 11 pounds per foot.

In remote parts of the Tennessee Valley some families live 21 miles from a postoffice, and some 40 miles from a paved road.

Astronomers hope that the vast sample of space which their great telescopes can now penetrate is a "fair sample" of the universe at large.

Japan is making renewed efforts to raise sheep on a large scale, though bamboo grass, which injures sheep that eat it, has been a serious obstacle in the past.

Gulls have found a way to rob cherry orchards in Utah: unable to alight on the trees with their webbed feet, the birds beat the fruit down with their wings and then fly to the ground to feast.

WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the articles.

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SEISMOLOGY

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SURGERY

What relief does the surgeon offer bunion sufferers? p. 400.

PHYSIOLOGY

New Vitamin, Choline, May Aid In Diabetes Control

Present in Meat, Egg Yolk, and Yeast, It Is Needed For Liver Functioning; Lack Causes Fatty Liver

A NEW vitamin which is essential for liver function and which may play an important role in controlling diabetes was described at the meeting of the American and Canadian Medical Associations by one of its discoverers, Dr. C. H. Best of Toronto, co-discoverer of insulin, the life-saving remedy for diabetes.

The new vitamin has a real name, choline, instead of a letter as do most other members of the vitamin family. It is found in many foods, but the best sources are meat, egg yolk and yeast.

Dr. M. Hershey and Miss M. E. Huntsman, of the University of Toronto, were responsible for many of the fundamental observations that led up to the discovery of the significance of choline, Dr. Best stated.

Lack of this vitamin causes the serious condition of fatty liver, Dr. Best said. When the liver becomes fatty, it fails to make sugar or handle bile or do many of the things it should do, he explained.

The vitamin was discovered in the course of insulin investigations. Dogs that had no pancreas, the insulin-secreting organ, failed to live for more than a few months, even when given insulin injections. When they were fed minced pancreas, in addition to the insulin, they lived for years.

However, chemical studies of the pancreas showed that in addition to producing insulin and a digestive ferment, this organ contained choline, and that it was the choline in the diet of minced pancreas that kept the dogs alive after they had lost their own pancreases.

Serious in Humans

Cases of fatty liver in human beings, a serious condition of ill health, may be due to lack of choline in the diet; but Dr. Best did not discuss this point.

The choline discovery has thrown further light on the diabetes problem. The latter condition is a liver disorder rather than a disorder of the insulin-producing pancreas, it now appears.

"The pancreas is not always to blame in cases of diabetes," Dr. Best declared.

Diabetes may be caused in three different ways: the liver, as the result of injury or disease, may become too active and make too much dextrose sugar from the starches, sweets and proteins eaten; or the liver may become overactive due to lack of insulin (the usual explanation though not necessarily the usual cause of diabetes); or, finally, the pituitary, thyroid and adrenal glands, either alone or in combination, may become overactive and affect the liver through their relation with the insulin-producing part of the pancreas.

The pancreas was evidently at fault in the first case of diabetes treated with insulin, that of Leonard Thompson, of Toronto. Following Mr. Thompson's death from pneumonia in April, 1935, autopsy examination showed remarkably few of the insulin-producing islet cells in the pancreas.

This patient, who as a lad was dramatically rescued from danger of diabetes by treatment with some of the first insulin ever produced, grew careless about his diet when he grew older. As a result, he developed diabetic coma and then pneumonia. The physicians were able to relieve the diabetic condition again by insulin but they could not save him from the pneumonia.

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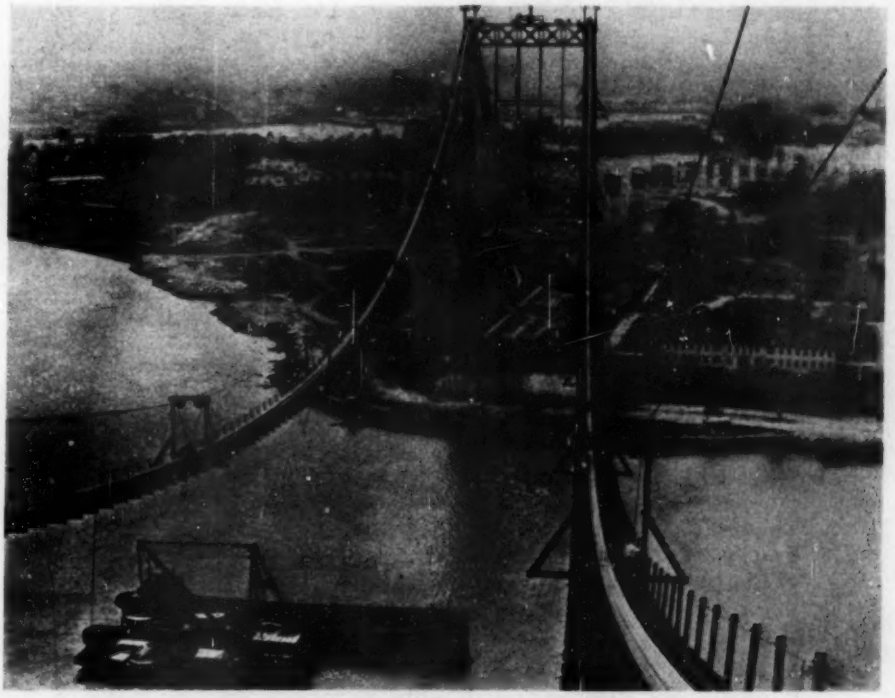
NUTRITION

Destiny of Man Can Be Controlled Through Diet

"MAN'S place in future history will depend in no small degree on the food he eats."

This prophecy was made by Dr. James S McLester of Birmingham, Ala., president of the American Medical Association, in his presidential address before the joint sessions of that organization and the Canadian Medical Association.

Longer life, larger stature, greater vigor and a higher level of cultural attainment are promised to those races of man that take advantage of the new knowledge of nutrition, Dr. McLester said. Man is no longer a puppet of Fate but through scientific advances in the study of foods and health he can now to



NEW YORK'S NEWEST BRIDGE

Triborough Bridge, linking New York's Boroughs of Queens and the Bronx, takes shape. View above shows workers' catwalks on bridge structure spanning famous Hell Gate channel. Financed with PWA funds, the new bridge will be the fifth crossing the busy East River which separates Long Island from the rest of New York State. Others include the Brooklyn, Manhattan, Williamsburgh and Queensborough Bridges.

a considerable degree be master of his own destiny.

Scientists have pointed the way for man to attain this mastery. The problem now rests with those responsible for education and government, Dr. McLester indicated. People must be taught what foods to eat and they must be insured an adequate supply of food.

Something like twenty million American people are probably getting barely enough, or in some cases not even enough, food of the kind to keep them healthy, Dr. McLester said in taking up the economic aspect of the problem.

"This condition, if continued, will surely affect the health of the race. To make agriculture profitable to the extent that a good rural population can be maintained and at the same time the rest of the population supplied with cheap food is a problem that confronts the nation."

While he did not himself offer a solution of the problem, he quoted the report of the Elgin Committee, appointed to determine a national agricultural policy for Scotland, as follows:

"It is in the interest of the state that the price of food be kept so low that the poorest can obtain an adequate dietary."

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MEDICINE

Insulin Finds New Use As It Conquers "Hungry Disease"

INSULIN, gland product that keeps diabetic patients alive and well, can bring health to persons suffering from the "hungry disease," which is the exact opposite of diabetes.

This new, paradoxical use of insulin was described by Dr. Henry J. John of Cleveland at the meeting of the Association for the Study of Internal Secretions.

Heretofore the "hungry disease" was treated by surgical removal of a large part of the pancreas, a radical operation, hazardous even when performed by the most skilled surgeons. Now, instead of removing the pancreas or a large part of it, Dr. John "puts the organ to sleep" by giving a dose of insulin, the very same stuff that is produced by the pancreas in too great amounts in this disease.

The contradictory-sounding treatment was explained by Dr. John somewhat as follows:

Food is the trigger that starts insulin production in the pancreas. In diabetes, not enough insulin is produced and the amount must be supplemented by giving the patient more insulin. In the "hungry disease," known medically as hyperinsulinism, the pancreas goes on pouring insulin into the blood long after there is any need for it. As a result, these patients get very hungry, nervous, irritable and may lose consciousness.

Rests the Pancreas

Eating seemed to take care of the condition temporarily by using up some of the extra insulin, but the only way to shut off the production was by removal of a large part of the pancreas. Dr. John's method is to give insulin soon after a meal and before the pancreas has received the signal to start its own insulin production. The insulin dose is calculated to take care of the sugars and starches the patient has eaten, while his own over-active insulin factory gets a rest.

The insulin treatment for this "hungry disease" is continued for three months, by which time the condition seems to be permanently relieved. The long rest evidently puts the pancreas back into a normal state and it can go on functioning on its own after that.

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PUBLIC HEALTH

Birth Control Investigated By Medical Association

THE American Medical Association's House of Delegates, meeting at Atlantic City, has just appointed a committee to study problems of birth control, apparently including methods and effect of contraception generally on population's health and to make at least a preliminary report to the Association at the meeting next year.

This is "not to be interpreted as a declaration either for or against birth control." It is the first time, however, that efforts to have such a committee appointed have succeeded or that the Association ever took note of the matter officially as a medical problem.

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PLANT PHYSIOLOGY

Boron and Manganese Important in Plant Growth

LABORATORY experiments with two minor soil elements, boron and manganese, may bring about radical changes in the fertilization of several vegetable crops in the near future, an announcement by the New Jersey Agricultural Experiment Station at Rutgers University reveals.

Research conducted by Dr. John W. Shive, the institution's plant physiologist and professor of plant physiology for the New Jersey College of Agriculture, has demonstrated that vegetable growers are not entirely correct in assuming the addition of nitrogen, potassium and phosphorus to the soil through fertilizer applications will supply all of the elements needed for satisfactory plant growth.

Dr. Shive has shown, through experiments in sand made absolutely "pure" by the removal of all plant nutrients, that deficiencies in either boron or manganese may kill an entire plant. Growers have not previously considered these elements in ordering specific fertilizer formulae for their crop.

Scientists and growers alike have been puzzled by the obvious nutritional deficiencies in fields where time-honored fertilization practices had been properly followed. Dr. Shive's laboratory accomplishments have now focused the spotlight upon the necessity of these two minor elements.

The Rutgers scientist secured "pure" sand for his experiments by washing the sand and then treating it with hydrochloric acid. After a second washing, all soluble material had been removed and it contained no plant nutrients of any kind.

Dr. Shive grew radishes in two-gallon crocks filled with this "pure" sand. To both crocks he provided a nutrient solution containing all the necessary major elements required for plant growth—potassium, calcium, magnesium, nitrogen, sulphur and phosphorus. To one of these crocks he added one-half part per million of boron and manganese.

The radishes receiving boron and manganese thrived. The terminal buds of those not given the additional applications turned brown within a few days; in three weeks they were practically dead.

Dr. Shive secured similar results with other plants such as tomatoes, corn and peas. Nasturtiums were killed by boron deficiency.

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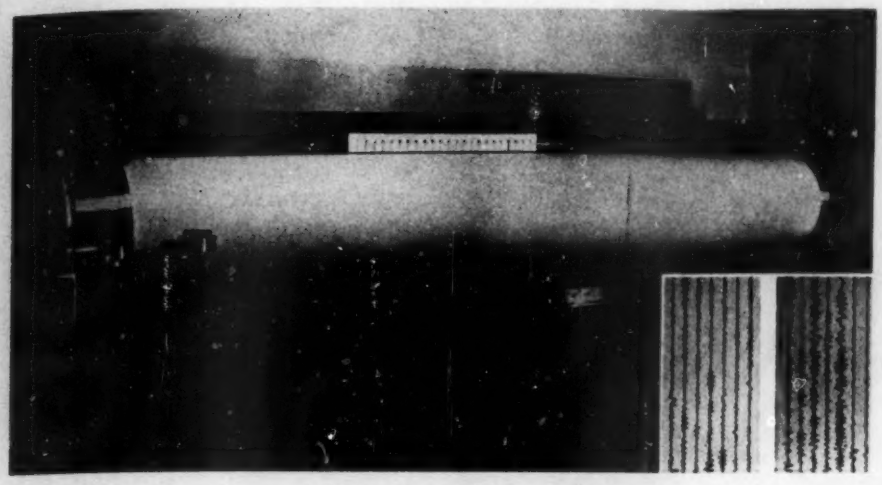

BRAIN WAVES WRITE THEIR RECORD

On this massive rotating drum, at the Loomis Laboratory, Tuxedo Park, N. Y., the minute fluctuating electric currents from the brain write their own record, after suitable amplification. Inset: parts of two brain-wave records; left, subject awake, right, subject sleeping.

PHYSIOLOGY

Brain Waves Observed Better During Sleep of Subject

BRAIN WAVES, those recurring fluctuations in the minute electric currents that flow from the brain, can be studied to better advantage upon a sleeping than on a waking subject. The brain of the sleeper responds more readily and more certainly to such stimuli as the rustling of paper or the slamming of a door in another part of the house, even though there is no consciousness of their having occurred.

These are among the facts discovered in the course of a series of experiments at the Loomis Laboratory, conducted by Alfred L. Loomis, Prof. E. Newton Harvey of Princeton University, and Garret Hobart. (*Science,* June 14).

There is no doubt, the experimenters state, that these waves originate in the brain, and that they are distinct from muscle potentials and the results of movements. Different persons show quite different brain-wave records.

Records taken at night on sleeping persons show many spontaneous bursts of waves at certain hours, relatively few at other times. These often bunch themselves into "trains" lasting from five to twelve seconds, at intervals of from one-half minute to two minutes.

On an average, brain waves have a frequency of about ten per second, though this is somewhat irregular. Several different patterns of brain-wave groups are shown by the records.

Regular snoring does not necessarily start the brain rhythms, but an occasional isolated snore may start a train of them.

During sleep, trains of waves appear which cannot be correlated with any detectable external stimulus, but which may be connected with internal disturbances of unknown origin.

Mr. Loomis and his associates have constructed a recording apparatus of a unique type, for use in these brain wave experiments. Formerly records were made on paper tape, but by the end of a "run" lasting several hours there would be a half-mile of the stuff, as tangled as a fishline. So they built a cylinder eight feet long and 44 inches in circumference, driven by a synchronous motor so that it acts as its own clock. It rotates once in a minute.

On the paper stretched on this huge drum two pens trace parallel lines. One line, in green, records the brain waves, as amplified in an elaborate vacuum-tube hook-up. Each wave makes its appropriate "wiggle," and a whole set of them looks not unlike the record of an earthquake on a seismogram. The second line, in red, records all extraneous occurrences, such as movements in bed, loud noises in the room, etc. Either line can be examined or photographed separately by using an appropriate light filter.

As the drum revolves, a worm gear moves the pens slowly along, so that they travel one foot an hour. On one "run" of the drum, therefore, all the brain waves arising during a whole night's sleep can be recorded if desired. And when the paper is removed, it provides a chart, eight feet wide by 44 inches high, of all occurrences, minute by minute. Each minute is represented by lines 44 inches long, each second by about half an inch of such line.

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PHYSIOLOGY

Offensive Odor on Breath May Now Be Overcome

YOUR best friend can now tell you! A lasting remedy for offensive breath odors seems at hand. Even the long-lingering odor of garlic yields to treatment devised by Drs. Howard W. Haggard and Leon H. Greenberg, of Yale's laboratory of applied physiology. (*Journal, American Medical Association,* June 15).

"The breath can be immediately and completely rid of the odor (garlic) by washing the teeth and tongue and rinsing the mouth with a solution of chloramine," the Yale physicians state. "The chlorine liberated in the mouth reacts chemically with the essential oils and deodorizes them. It is probable that many cases of foul breath from other causes would be amenable to the same method of treatment."

The solution of chloramine was made by dissolving one 4.6 grain tablet in a small amount of water. Chloramine is a well-known chemical available at drugstores which is used in the treatment of wounds and for sterilizing drinking water.

In the Yale treatment particular attention was paid to the brushing of the tongue, for the papillae at the base of the tongue have long been under suspicion as the source of odor from retained food particles.

In their experiments Drs. Haggard and Greenberg first proved that the source of most obnoxious breath is not systemic but local. It arises, at least in the case of onions and garlic, solely from particles retained in and about the structures of the mouth. Air in the lungs does not taint the blood; the stomach is not at fault, nor is the saliva.

Having determined this, the physi-

cians set about either to remove or deodorize the particles. They brushed the teeth and tongues of their subjects with soap and water and rinsed their mouths. Still the odor remained.

Next they tried the proprietary mouth washes which rely on alcohol to sweeten the breath. These only masked the odor for from fifteen to twenty minutes.

Finally they hit upon the chloramine solution treatment, which brings lasting relief when used in connection with thorough brushing.

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MEDICINE

Put Olive Oil Into Veins to Help Babies Gain Weight

TWENTY starving little babies in Baltimore have been given a new lease on life by injections of fat directly into their veins.

The babies were not starving from lack of food but because they suffered from such severe digestive disorders that they could not get any benefit from nourishment fed to them by mouth. The new feeding method which put fat onto their emaciated little bodies and filled out their sunken cheeks was developed by Drs. L. Emmett Holt, Jr., Herbert C. Tidwell and T. F. McNair Scott of Johns Hopkins Hospital.

Olive oil is first mixed with lecithin from egg yolk. The mixture is then homogenized at 4,000 pounds' pressure to break up the large oil globules into such small particles that they will pass through the tiny blood vessels of the lungs. Finally it is sterilized and then injected into the babies' veins.

Each day for about a week the sick infants received a dose containing approximately the amount of fat that would be eaten in a normal diet for one day. After the second dose, the babies gained weight and began to improve.

Putting fat or oil into veins is a new venture in medical treatment. It has been tried a few times abroad but so far as is known the Baltimore physicians are the first to use it in this country. Dr. Holt and associates found after they had started the fat treatment that a similar method had been developed by a Japanese physician, Yamakawa.

The method can be applied to other conditions besides the severe digestive disorder of babies, Dr. Holt and associates believe. It should be useful whenever it is necessary to give the stomach and intestines a rest while keeping up the patient's strength. Dr. Yamakawa used it in treating stomach ulcer patients.

Physicians have for some time been keeping alive desperately sick babies and grown-ups, too, by injecting sterilized solutions of salt and sugar into their veins, but this is a much simpler procedure as the sugar and salt solutions mix readily with the blood. Fat and oil, however, do not mix any better with blood than with water. Physicians hardly dared to inject them directly into the veins, fearing disastrous consequences.

Salt and sugar and water, however, were not enough to keep some of the very sick infants alive, Dr. Holt and associates found. Even healthy persons need, in addition, fats and protein foods like meat and eggs. The problem was how to give these to the babies. The part of the digestive tract that takes care of fats was the very part that was too sick to do its job properly in these infants.

Fat to be put into the veins must be broken up into very fine particles. These particles must not settle out but remain suspended in the mixture until it has been sterilized and the blood has been able to carry it through the lungs and to the liver where it can be used as fuel to keep the body's fires burning or routed to fat storage depots in other parts of the body.

The Baltimore physicians borrowed the dairyman's method of homogenization by which butter fat is broken up into such fine particles that the cream will not separate from the milk. They added lecithin from egg yolk because this served to stabilize the emulsion. They tried the mixture first on animals and then on normal babies before giving it to the very sick infants.

They find olive oil the best to use but other kinds of oils or fats might be used for this treatment.

Now that they can put fat into the veins with good results, they hope a method will be found to give the other necessary kind of foods, proteins, for the benefit of patients who cannot digest meat or eggs.

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MEDICINE

Leg Cramps Relieved By Gland Extract Injections

CERTAIN disabling leg cramps can be relieved by a glandular extract taken from the pancreas.

How this new treatment helped older persons, incapacitated by leg muscle cramps resulting from hardening of the arteries in the legs, was demonstrated by Drs. Irving S. Wright, A. W. Duryee and coworkers of Bellevue and New York Postgraduate Hospitals, New York City, before the meeting of the American and Canadian Medical Associations.

Men who could not attend their daily business because they were unable to walk as much as five city blocks without an attack of leg cramps were enabled by this treatment to walk as much as a mile and a half. As a result they are able to keep on earning their livings.

The extract does not contain any of the insulin secreted by the pancreas. It does not cure the cramp condition, but relieves it. The injections are given three times a week and must be continued in order to keep up the relief.

Many persons who are going to chiropodists for treatment of cramps of the feet and legs are suffering from hardening of the arteries, although they do not realize that this condition is giving them the cramps.

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PHYSIOLOGY

Breath and Blood Tests Do Not Prove Intoxication

THE ONLY way to determine intoxication positively, as in the case of drunken drivers, is by examination of the brain tissue after death or by examination of the spinal fluid in living persons, in the opinion of Dr. A. O. Goettler of New York City. Dr. Goettler gave his opinion at the meeting of the American Society of Clinical Pathologists in answer to a question at the conclusion of his report on methods of detecting poison in children who had accidentally been given the wrong medicine or had themselves sampled the contents of the family medicine chest. Dr. Goettler and associates in the medical examiner's office of New York City do not believe that tests of the breath, blood or kidney excretion give definite evidence of intoxication. Such tests, he said, only show that "a man has partaken of alcohol."

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SEISMOLOGY

Woman Builds Own Instrument For Study of Earthquakes

Pipe, Needles, Silk Thread, Clock Frame and Smoked Paper Are Some of the Materials She Used

EARTHQUAKE study is the scientific avocation that has intrigued Mrs. M. M. Seeburger of Des Moines, Iowa. In the basement of her home she has installed a complete recording seismograph, which she built with her own hands on designs of her own invention. The instrument was put into operation recently, and now Mrs. Seeburger regularly reports earthquakes through the far-flung cooperative network of seismological observatories operated jointly by Science Service, the U. S. Coast and Geodetic Survey, the Jesuit Seismological Association and numerous university and governmental observatories in the United States, Canada, and overseas islands.

Mrs. Seeburger was interested first in the instruments used in measuring and recording the activities of volcanoes. She studied many such instruments in her travels. However, as she phrases it, "Volcanoes will not come to your door, here in Iowa, but earthquakes will. So I decided to concentrate on seismology, and spent two years working on the design and construction of our instruments and station."

The Uses of Inertia

Mrs. Seeburger's seismograph is based on the same principle as all other instruments of its type: what physicists call the inertia of a freely suspended mass. Inertia is what snaps your head back when a train starts abruptly, or makes you lurch forward when the four-wheel brakes on your car work too quickly. Basically, every seismograph consists of a suspended mass of metal that tries to stand still when the earth shifts under it, with a suitable apparatus for magnifying that relative motion and recording it on suitably prepared paper.

Mrs. Seeburger's instrument consists of two horizontal pendulums, one to record north-south movements of the earth, the other to record east-west movements. They are both built essentially alike.

For each, there is a mast-like steel upright, set firmly in a block of concrete embedded in the earth. Projecting from a pivot near the bottom is a long arm or boom, made of three-eighths inch pipe. Near the outer end of this boom is a heavy mass of lead, so arranged that it can be slid in or out, to reach the right adjustment. A length of piano wire to the top of the upright supports the weight.

From the end of the boom a lightly-built metal fork projects. Into its two ends Mrs. Seeburger set a pair of ordinary steel needles. These she threaded with one silk thread, running it around a delicately pivoted grooved steel wheel in a common clock frame. To the wheel is attached a light aluminum finger ending in a fine, lightly-balanced stylus, that bears on a piece of smoked paper stretched on a slowly turning drum moved by clockwork.

So long as the earth is quiet, the aluminum finger stands steady. But if a remote earthquake sends tiny tremors through the crust of the earth, the soil of distant Iowa responds with imperceptible motion. The inert lead weight balks at moving, and its differences with the earth under it, magnified fifteen times by the threaded wheel and the moving finger of aluminum, are registered by a wiggly line on the smoked paper drum. Mrs. Seeburger has learned to read this earthquake-shorthand, and she transmits its messages by coded wire to Washington, for correlation with other quake telegrams from the cooperating stations of the network.

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Coins of Emperor Nero's time have been found in north Jutland, showing that Scandinavia had connections with the Roman Empire earlier than was supposed.

WOMAN WATCHER OF EARTHQUAKES

Mrs. M. M. Seeburger of Des Moines with the seismograph she designed and built and which she operates herself. Materials used in construction range from heavy masses of concrete and lead to such housewifely items as sewing needles and silk thread.

SURGERY

New Operation for Bunion Lets Patient Wear Shoes

A NEW operation for bunion in which the foot gets well quickly and the patient can wear ordinary shoes in comfort was reported by Dr. Earl D. McBride of Oklahoma City at the meeting of the American and Canadian Medical Associations.

The operation proved satisfactory in 39 consecutive cases, Dr. McBride said. He called it a conservative procedure which tends to restore the normal architecture of the toe.

The muscle that pulls the toe inwards is released by the operation. The muscle on the outside is shortened. Thickened tissues are removed and also a small amount of bone if the deformity is severe. The mechanical force causing the deformity is thus corrected. An additional advantage is having the scar underneath, where it is safe from irritation.

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EUGENICS

Intermarriage Of Deaf Should Not Be Encouraged

A WARNING that intermarriage between young people who have defective hearing is being encouraged, rather than discouraged, and that such couples should think twice about hereditary angles of the situation before marrying, was sounded at the meeting of the American Federation of Organizations for the Hard of Hearing.

Dr. Elbert A. Gruver, superintendent of the School for the Deaf, Mount Airy, Pa., told of a recent survey of publications for hard of hearing persons which brought to light 57 wedding announcements.

"Is anything being done to discourage this tendency to intermarriage?" he asked. "Not so far as we know. On the contrary, the apparent approval expressed by the congratulatory notices in some of the publications would be very likely to have the opposite effect."

Dr. Gruver's report checks up on prophetic alarms of Dr. Alexander Graham Bell, which aroused much controversy over fifty years ago. Dr. Bell, telephone inventor and teacher of the deaf, observed the tendency of deaf couples to marry, and wrote a "Memoir upon the Formation of a Deaf Variety of the Human Race." The memoir raised a storm of protest, but it led quickly to research showing that congenital deafness is hereditary.

So far as acquired deafness is concerned, Dr. Gruver pointed out that knowledge is still limited. The little-understood condition known as otosclerosis or progressive deafness is clearly hereditary, according to testimony of no less than twenty-six specialists, he said.

"I do not presume to say how we should proceed," concluded Dr. Gruver, "except to advise that we make full information available, and that we see that it is in the hands of all deaf or hard of hearing young people at as early an age as possible. For, to quote a comment penciled on the margin of a book at the Volta Bureau in Dr. Bell's own hand: 'It is too late to reason with a man *after* he has fallen in love. He cannot help himself.' "

Science News Letter, June 22, 1935

MEDICINE

Over 50 Per Cent Success With Drug Treatment

A NEW method of treating narcotic drug addiction which cured 31 out of 57 addicts was reported by Drs. Theophil Klingman and William H. Everts of Ann Arbor, Mich., to the meeting of the American and Canadian Medical Associations.

Hyoscine, one of many derivatives of belladonna, and pilocarpine, a substance from a South American plant called jaborandi, were the medicines used. Both of these have been tried before in treating drug addicts, Drs. Klingman and Everts pointed out, but they have modified the method of giving these remedies and believe they have developed a rapid, simple, painless and non-hazardous way to give relief from the craving for narcotics.

Hyoscine is given at the beginning of the six to eight weeks' treatment. This causes a mild delirium and has the peculiar effect of washing out of the mind all memory of events during the treatment. Hyoscine also tends to allay pain. Following this, pilocarpine is given. This quickly dispels the delirium. Further treatment consists in investigating the patient's mental state and environment and in making every possible adjustment.

Of the group of 57 so treated, 31 are now known to be free of the narcotic drug habit three and one-half years after the treatment. Seven relapsed after being free for from three to ten months. The other 19 could not be located to learn the results of the treatment.

Science News Letter, June 22, 1935

IN SCIE

MEDICINE

Streptococcus Disease Germs Are Distinct Forms

SCARLET fever, erysipelas and other diseases caused by infection with streptococci are probably each caused by a distinct and different type of streptococcus "germ," in the opinion of Dr. Ludvig Hektoen, of Chicago, who spoke before the meeting of the American and Canadian Medical Associations. The problem is one of the unsettled questions of bacteriology.

Skin tests made by Drs. George and Gladys Dick, of Chicago, showed that some persons were susceptible—or gave a positive reaction, as physicians call it, to scarlet fever toxin but not to erysipelas, and vice versa.

These findings were quoted by Dr. Hektoen in support of his view that the two diseases are caused by two different types of streptococci.

Science News Letter, June 22, 1935

PSYCHOLOGY

Dionne Quintuplets Normal for Age

THE DIONNE quintuplets are "at age" in intellectual and other development, Dr. Allen Roy Dafoe of Callander, Ontario, reported to the meeting of the American and Canadian Medical Associations. This is the first finding of the scientific psychological studies which are being made of the famous little sisters.

Although they look so much alike that even Dr. Dafoe can hardly tell them apart, their personalities are quite noticeably different.

Their survival is due in large part, Dr. Dafoe said, to the good French-Canadian stock from which they spring and which enabled hardy pioneers like La Salle to survive the hardships of frontier life in exploring and opening up parts of Canada and the United States.

Credit for the babies' survival was also given to the excellent nursing care they have had, and to the fact that "there were no aunts or uncles or grandparents saying what to do."

Science News Letter, June 22, 1935

FIELDS

MEDICINE

Current Carries Drug To Heal Varicose Ulcers

VARICOSE ulcers, resulting from varicose veins, some cases unrelieved for as long as 37 years, were completely healed by three weeks of treatment demonstrated before the meeting of the American and Canadian Medical Associations by Dr. Irving S. Wright and his associates, of Bellevue Hospital, New York City.

This treatment consists of galvanic induction through the skin of a chemical called acetyl beta methyl choline chloride.

A bandage soaked in the chemical is wrapped around the patient's leg, a sheet of metal covers it and a galvanic current is passed through. This induces the healing chemical to enter the underlying tissues.

While Dr. Wright and associates believe all cases of varicose ulcers can be healed by this treatment, they will not remain healed unless the underlying condition that caused them is removed. If the cause was varicose veins, which it frequently is, these should be treated.

In diabetic patients, however, it may be impossible to inject the varicose veins. In such cases, the galvanic induction treatment is particularly valuable, though it may have to be continued for years.

Science News Letter, June 22, 1935

MEDICINE

Acne Sufferers Should Avoid Spinach and Pork

PERSONS suffering with acne would do well to avoid spinach, pork and potatoes, it appears from a report made by Drs. T. D. Cunningham and J. C. Mendenhall, of Denver, to the Association for the Study of Allergy.

These foods more than any others caused a reaction in acne sufferers who were tested for food sensitivity, the Denver physicians found from skin tests similar to those made on hay fever and asthma patients. The tests were made in the course of a search for the cause of acne.

This troublesome condition, one form of which is the familiar "breaking out" seen on the skins of adolescents, is apparently a state of sensitiveness to foods. Practically all acne sufferers are sensitive to proteins in foods, Drs. Cunningham and Mendenhall reported. Other factors such as drugs and glandular disturbances can and do produce acne in a small group of cases.

Diet has long been a method of treating acne, but the work of the Denver physicians shows that the diet can now be put on a more exact and scientific basis. Instead of avoiding certain general classes of foods as formerly, the acne sufferer can now have the skin tests made to determine whether food is the cause of his condition and if so which foods in particular he should avoid.

Half the acne sufferers described today said they had from ninety to one hundred per cent. relief after following a diet selected in this way. The majority of the patients, seventy-five per cent., received from fifty to one hundred per cent. relief by avoiding the foods to which they were found sensitive.

Science News Letter, June 22, 1935

MEDICINE

Excess Sugar in Blood Not Necessarily Harmful

EXCESSIVE sugar in the blood is not necessarily harmful, even in diabetes, Dr. Herman O. Mosenthal of New York City told members of the American and Canadian Medical Associations.

A high level of sugar in the blood may be "normal" for some persons. When, however, the sugar content of the blood is high and in addition sugar and water are being eliminated from the body in excessive quantities, as in diabetes, the situation is serious.

Dr. Mosenthal warned against attempting to reduce the excess amount of sugar in the blood by underfeeding. Some diabetic persons do this in an effort to avoid taking insulin. It is dangerous, he explained, because the malnutrition which results from the underfeeding may lead to hardening of the arteries and is a factor in producing diabetic coma.

Many diabetic patients actually need excess sugar in their blood in order to utilize any sugar at all in their bodies, Dr. Mosenthal said. The same is true of some normal persons. The excess sugar appears to act as a stimulus to assimilation of sugar. Dr. Mosenthal said he had noted many persons with a high blood sugar level who did not later develop diabetes.

Science News Letter, June 22, 1935

CHEMISTRY

Mathematical Equations For Cake Aid Bakers

EQUATIONS for angel cake are the latest aid for bakers in high altitude where the reduced air pressure influences cake dough and makes pastry tough, grainy, soggy, coarse or any of the other "disasters" known to housewives.

Speaking at the meeting of the American Association of Cereal Chemists, Mark A. Barmore, of State Agriculture College, Fort Collins, Colo., described new tricks in baking wherein cakes are made mathematically and tenderness is tested mechanically.

Tenderness in angel food cakes, Mr. Barmore reported, increases with altitude and with sugar content of the cakes; and it decreases with increasing amounts of flour and egg white content.

Just as it is difficult to boil eggs on a mountain top, because water boils at a lower temperature due to the reduced air pressure, so too does altitude affect baking. For one thing, the dough has a greater expansion during baking and the temperature inside the cake falls.

To mechanically-minded bakers, tenderness is known as tensile strength, the same term that is used to indicate the structural strength of steel.

Mathematical equations are now available, Mr. Barmore reported, which link the effects of ingredients and altitude with dough's tensile strength from sea level up to 15,000 feet.

With one-third of all the United States at heights where altitude affects baking, and with 5,000,000 people dwelling in this area, the baking equations are not as meaningless as they may sound at first.

Science News Letter, June 22, 1935

ORNITHOLOGY

Rare White Oriole Bagged in Siam

ONE of the world's rarest birds, the white oriole, has been added to the Smithsonian Institution collections.

Specimens were collected by Dr. Hugh M. Smith, former fisheries expert for both the United States and Siam. Because white orioles live in the tops of the highest trees of dense evergreen forests they are rarely killed for scientific study.

They are not related to the Baltimore oriole of this country, which is really a form of blackbird. The Old World true orioles are more closely related to crows.

Science News Letter, June 22, 1935

PSYCHOLOGY

Women Scare Easier Than Men

But That Is a Sign of Strength, Says Psychologist, Who Explains That Emotion Is Way of Meeting Emergency

By MARJORIE VAN de WATER

IT IS late at night. You are awakened in the pitch-black room that you occupy alone. You hear a faint sound, as though some one were moving about stealthily in the room or approaching the door.

Do you have a shivery feeling of fear? Is your breathing disturbed, and your heart-beat quickened? Or do you merely experience a mild feeling of curiosity as to whom it could be?

Are you frightened by fire alarms in your neighborhood, by large dogs rushing noisily at you, by high places or precipitous descents, or by traffic rushing close beside you?

If you are driving an automobile when a child suddenly darts out from the curb and you miss running him down by the narrowest possible margin, do you have a panicky desire to cry out, to hide or to take flight?

Most people can recall situations of this sort that have given them a real scare. Some persons are much more subject to fright than others, however.

If you are a woman, you are probably much more subject to fright than are most men. In this matter, popular opinion has been corroborated by scientific evidence gathered by a psychologist at the University of California, Dr. George M. Stratton.

Daily Record

Using a day by day record of how his subjects felt and acted in the real thrilling situations of life, not the fictitious or synthetic scares of the laboratory, Dr. Stratton made an analysis disclosing what factors are associated with fear and anger.

Sex is one of these factors.

"The frequent opinion that women are more emotional than men is supported," he said in reporting some of his conclusions in the American Journal of Psychology. "There is also support for the particular opinion that women are more timid than men."

"The opinion, however, that women are less inclined to anger, that women are more placid in situations which arouse men to wrath appears quite unsupported."

Is this greater tendency of women to fly off the handle, to become angry, or to tremble with fright over some disturbing incident, indicative of her general weakness? Dr. Stratton disagrees with some psychologists in declaring that it is not. Rather it is a sign of biological strength, he says.

A display of emotion is not necessarily a signal of failure to meet a situation; emotion may be a means of meeting an emergency more adequately. Fear and anger are connected with the invigorating not only of the muscular system, but also of the powers of thought, of impulse, and of desire.

Excitement makes available at the instant a larger array of pertinent ideas and organizes these about the central desire needing their service. Not only are the muscles fortified, but the thoughts, feelings, and impulses are selected, accelerated, intensified, and integrated, with the result that the individual can the better meet the emergency.

Not Opposites

Perhaps you have thought of anger and fear as opposite poles in emotion. This is not the view of the psychologist. Physiologically and psychologically these two emotions have a great deal in common, so much so that scientists are inclined to consider them as different aspects of the same thing; heads and tails of one common coin. Both are natural responses to an emergency, and whether the resulting action is fight or flight is somewhat a matter of circumstances. How quickly the wild animal will turn from desperate headlong flight to vicious battle when she is at last cornered.

Thus, Dr. Stratton believes that the tendency of women to quicker anger and fear is not a matter of weakness, but of strength. It is in keeping, he says, with her greater power to resist disease, her greater constitutional vigor. It is a part of her endowment for a fuller meeting of important biological and cultural needs.

This natural endowment is constantly being modified by the education girls receive from their parents and companions. Boys are trained in the other direction.

"There is held up before the male's eyes from early boyhood, the ideal of fearlessness, with timidity rebuked and ridiculed," Dr. Stratton said. "Anger, however, is permitted him and condoned; indeed in many a situation his fellows vehemently demand anger in the male. The boy's young companions, male and female, support this ideal as heartily as do his elders.

"The social ideal for the conduct of girls and women, on the other hand, has been quite different, less ready to countenance anger in them, while viewing with leniency or approval some show of fear."

The only child is not the "sissy" that he is sometimes depicted, Dr. Stratton's research indicates. He is not different, in either tendency to fear, or tendency to anger, from other first-born children.

Oldest Sons Are Brave

A difference was found, however, between the first-born and the younger brothers and sisters. And this difference is not the same for both first-born girls and first-born boys.

The man who has been the oldest boy in the family is less fearful than other men. The woman who has been the oldest girl in the family is more irascible than other women. These differences are slight, and Dr. Stratton explains them as probably due to the influence of the younger ones in the family.

"The first-born if a boy with brothers and sisters," Dr. Stratton says, "may perhaps be a shade more courageous than the only boy—as though the first-born's high office of big brother, with the expectation of courage which it suggests, tended to make him more stalwart in the presence of danger.

"The first-born, if a girl with brothers and sisters, is inclined to more anger than is the only daughter—as though younger brothers and sisters taxed a girl's resources more than they did a boy's. Younger brothers with their socially-encouraged rebellions against petticoat domination perhaps seed the soil more richly for a crop of anger in the girl, whereas the only daughter can find in the home merely her parents to annoy her."

In previous research, Dr. Stratton has searched for a relation between fear and anger and intelligence and accomplishment in mental work. He found no connection between these emotions and in-

telligence, but that might be because his study at that time was limited to college students all of a rather high grade of intelligence, he explained. A relation may exist at the lower levels of mentality.

Individuals who are irascible or timid are, on the whole, apt to accomplish less than those who have a calmer temperament.

Hinders Learning

"It is conceivable, and I believe it probable, that a greater readiness to be irritated or fearful is a direct impediment to scholarly achievement," Dr. Stratton said in interpreting these results.

"This is probable, I feel, even though we have evidence that, with other things equal, to assume something like an angry attitude toward a problem, as though to down it, increases the chance of solving it.

"But the assumption of a fighting attitude toward a problem is, of course, different from the assumption of a fighting attitude toward the person who sets the problem, or toward a classmate or a roommate, or the elderly academic fates that do their small best to lessen college pleasures.

"The person inclined to be irritated is too often wasteful of his energy; and the same is true of fear."

The Nordic is not, after all, the most courageous of all the Caucasians and the most terrible in his wrath, Dr. Stratton found. This honor, if honor it be, should very likely go to his neighbors from the south, the Mediterraneans, while the Nordic finds superiority in possession of the virtues of the average—neither phlegmatic like the Alpine not gusty like the Mediterranean.

This was his finding when he recently compared the anger and fear reactions of 1,000 university students with certain of their physical characteristics.

Hair Color

Is red hair the flaming signal of a violent temper? Hair color does have a definite though small relationship to tendency to anger, Dr. Stratton found. But it is the dark-haired person who has the most intense anger.

Hair color is not so good an index to temper as is the shape of the head. In the same situations, narrow-headed persons become angrier or more afraid than do those whose heads are of medium proportions or broad. Those with heads of medium width are most phlegmatic, showing the least intense fear and anger.

The greatest contrast is not between those of widely different features, but between the middle group and those of one or other of the extremes.

Pan-Pacific Press Bureau Photo

LONE SURVIVOR

Probably the rarest tree in the world is this member of the hibiscus family, growing in Hawaii National Park on the slopes of the great volcano Mauna Loa, at an altitude of 5900 feet. So far as is known, it is the only living specimen of its entire genus. If it dies, another ancient line of living things will have gone to join the dodo and the passenger pigeon. Efforts to propagate it have thus far been unsuccessful.

In the Nordic stock, Dr. Stratton points out, a narrow head is joined with light hair and light eyes; in the Alpine, a broad head is combined with medium hair and medium eyes; and in the Mediterranean stock, a narrow head is joined with dark hair and dark eyes.

Among the students studied by Dr. Stratton, only a very few could be defined as belonging to any one of these groups on the basis of all three characteristics, head shape, hair, and eye color. But when the "racial" classification was made on the basis of either head shape and color of eyes or head shape and color of hair, the number of cases was large enough so that the results were significant. It then became evident that those displaying Mediterranean physical characteristics have the most intense emotional reactions. Next came the "Nordics" and last the "Alpine."

"In some respects this order is in accord with the frequent opinion that the South European (for example, the Italian or the Spaniard) is more emotional than the European of the Center or of the Northwest; and with the opinion, perhaps less frequent, that the Alpine is the most phlegmatic of the three European stocks," Dr. Stratton said.

"The present indications lend no support, however, to the opinion that the race of long-headed, light-haired, blue-eyed folk of Northwestern Europe are the most courageous of all the Caucasians, and the most terrible in their wrath."

Another mystery group was, however, discovered by Dr. Stratton whose physical features do not fit the usual description of European stocks. This group has dark hair and dark eyes and a head of medium width. In its dark hair and eyes, it seems to be Mediterranean and its head-shape seems to be within the border of the Mediterranean stock as often defined. Yet this nameless group is emotionally at the opposite pole from the Mediterranean. They show a lower average degree of fear and of anger than does even the least intense of the three strains, the "Alpine"!

Perhaps you would like to give yourself a score on anger, and find out just how "terrible in wrath" you may be. Watch for the following situations as they may come up in the course of your day. When they arise, and before you have time to "cool off," give yourself a rating. Here are the situations:

Test For Anger

A friend of yours is unjustly criticized in your hearing.

Some one argues with you insistently against what you believe to be important.

You hear for the first time that a certain person has made a slighting remark about you.

You are rebuked before others by one of your companions.

An acquaintance passes without recognizing you, and you believe yourself to have been intentionally "cut."

Some one fails to keep an appointment with you and did not notify you that the appointment could not be kept.

Something of yours which you need is borrowed without your permission.

You are persistently and unpleasantly teased.

Disturbing Noise

There is continued music, conversation, typing, or the like, which disturbs you while you are trying to study.

There is continued music, conversation, typing, or the like, which disturbs you while you are trying to sleep.

At a theatre, concert, or other public place where you are trying to hear what is being presented, a stranger makes remarks or otherwise acts in a way to distract your attention disagreeably.

You are deprived of an anticipated pleasure upon which you had set your heart.

You have to do a disagreeable task because some one has shirked his duty.

You are treated discourteously by an employee in some office, shop, street car, train, or the like.

A stranger jostles or crowds you without apology.

"Central" of the telephone service delays for some time to give attention to your call, or does not seem to be trying to get the connection you wish, or connects you with the wrong number.

Cut Off

While telephoning, you are cut off in the midst of your conversation.

You hurry for a street car, and miss it by a very narrow margin.

You hurry for a ferry boat or for a connecting train and miss it by a very narrow margin.

Your score for irascibility depends upon how your reaction fits into the following scale:

If you are not annoyed or irritated in even the slightest degree, score 1.

If you are slightly annoyed, but there are no physical symptoms of emotion, so far as you can notice, score 2.

If you are irritated, you feel moderate displeasure, and there are physical symptoms of emotion (a very slight frown, or flush, or muscular tension, perhaps) but these are so slight that (it seems to you) they could be noticed only by an attentive observer, score 3.

If you feel an impulse to make cutting remarks; and the physical symptoms of your anger (such as frown, or flushed face, or irregular breathing) must (so it seems to you) be evident to any observer. But the symptoms do not have the character described in the following paragraph, score 4.

If your mental equilibrium is upset so that your work is interfered with; and you feel an impulse to attack the offender physically, or to throw things, or stamp with your foot, or slam the door, etc., score 5.

If you are stirred to passionate, violent anger; your physical as well as your mental equilibrium is upset; and one or more of the following physical symptoms, are present: trembling, nausea loss of appetite, inability to talk coherently (voice shaking, sputtering, choking sensation, or the like) pallor, weeping, score 6.

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MEDICINE

Diet Promises Longer Life For Heart Disease Patients

COMPLETE rest, a very restricted diet and avoidance of the usual heart drugs will enable many patients to recover from heart attacks and return to a regular life, Dr. A. M. Master of Mount Sinai Hospital, New York, told members of the American Heart Association.

Nearly two-thirds of the private patients so treated by Dr. Master and his associates, Drs. Harry L. Jaffe and S. Dack, are now able to lead normal lives. Another twelve per cent. have returned to light or moderate activity. Some of them are still living fifteen years after their first attack.

Heart disease is not really increasing, in Dr. Master's opinion. He takes an optimistic view of the situation. The increase of heart deaths reported is partly due to better diagnosis and partly to the fact that more persons are living to old age and it is only in the old age group that there is any real increase in deaths from heart disease, Dr. Masters believes. The stress and strain of modern life is not the cause of the increase of heart disease, in his opinion.

"Certainly there was just as much stress and strain in the Dark Ages, the days of the Huns, the plagues, the great fires, Spanish inquisition and the French Revolution as there was in the Great War or during the depression," commented Dr. Master.

The form of heart disease known as coronary artery occlusion has probably occurred just as frequently in the history of man as it does now, he said.

In this type of heart disease the arteries which supply the heart muscle itself with blood become so narrowed that the blood cannot pass through the tiny vessels. Sometimes the vessels are stopped up by formation of blood clots. It is the latter form of the disease for which Dr. Master and associates found restricted diet and rest a successful treatment.

The diet contains only about 400 calories a day at first and is gradually increased to 800. (The average healthy person who is moderately active needs between 2000 and 3000 calories a day). The restricted diet is continued for from two to five months on the average and the period of complete rest in bed lasts about five weeks. The results are as good as those obtained by the new and radical method of treating heart disease by removing the entire thyroid gland, Dr. Master and associates found.

Both removing the thyroid gland and the rest and diet treatment help the patient to recover by reducing the amount of work his heart must do.

A novel feature of the treatment is avoidance of the drugs usually given to relieve heart attacks, such as nitroglycerine, amyl nitrite, digitalis and ephedrine. Morphine and codeine, however, were given whenever needed to relieve pain and to help the patient to rest.

Science News Letter, June 22, 1935

Malaria is wide spread in Iran, and no organized attempt to control it has ever been undertaken, says a report from Paris.

BOTANY

NATURE RAMBLINGS
by Frank Thone

Vegetable Versatility

WHAT a variety of life-ways can be worked out by members of a single plant family!

Take the legumes, for example—that numerous and very widespread plant group that includes clovers, peas, beans and their relatives. They range in size from tiny plants, less than some of the mosses, to towering trees like the locusts and the Kentucky coffee bean. They range in wholesomeness from nutritious peas, lentils, innumerable appetizing kinds of beans, to the stock-poisoning loco weeds of the West. They range in habitat preferences from the mesquite and screwbeans of the arid Southwest to the hog-peanuts that grow in the waterlogged muck of swamps.

Whatever may be your requirement of a plant, there is pretty sure to be a legume of some sort to answer it. Food? So important is this family in our dietary that one member is almost the civic coat-of-arms of Boston, and in French "legume" has come to signify any kind of vegetable. Wood? Locust timber is of the best. Shade? Again the locust tribe can offer its services. Oil? There are soy beans and peanuts. Fodder for our beasts? Clover, alfalfa, lespedeza and soy bean hay. Flowers? Sweet peas, redbud, acacia, lupines, and a host of others besides. Flavoring? Well, there's licorice, at least, and honey from white clover and alfalfa. Even insect poisons: the potent new stuff called rotenone comes from derris and cubé of the tropics, and can at need be extracted from the Devil's-shoestring plant of our Southern coasts.

History and literature have been made by plants of the legume family. The pottage that Esau bought so expensively was made of either peas or lentils. So was that other mess of pottage which the prophet Habakkuk delivered in such a hair-raising hurry to the prophet Daniel. The "husks that the swine did eat" in the parable of the Prodigal Son were in all likelihood the cloyingly sweet-flavored pods of a small locust-like tree common in the drier lands of the Near East.

Even modern science acknowledges a debt to the legumes every time it uses a lens, in telescope, microscope, camera or projection lantern. For the word "lens" is simply the Latin for the edible seed of the lentil, which has a bulging discoid shape exactly like that of a double-convex magnifying glass.

Even greater, however, is the more direct debt of biology. For it was with a handful of common peas that Gregor Mendel, in the patient quietness of his monastery garden, laid the foundation for his famous generalization that is the beginning of modern genetics.

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MEDICINE

Fever Treatment Cures 80% With One Kind of Arthritis

Patients Hobbling About Painfully on Crutches One Day Are Able to Walk Briskly 48 Hours Later

A PATIENT suffering from one type of arthritis, that due to the gonococcus "germ," has an eighty per cent. chance of being promptly cured by a few sessions of fever treatment, Dr. Philip S. Hench of the Mayo Clinic reported to the American Association for the Study and Control of Rheumatic Diseases.

Fever treatment does not, however, offer nearly so much hope to patients suffering from other forms of arthritis, Dr. Hench emphasized.

At the rheumatism conference at Atlantic City Dr. Hench showed pictures of some patients afflicted with gonorrheal arthritis or rheumatism hobbling around painfully on crutches one day and walking briskly about twenty-four to forty-eight hours later. Early and efficient treatment is necessary to obtain the best results.

Even the patient who has had this type of arthritis for six weeks or more has still a 35 per cent. chance of being relieved of his painful symptoms, Dr. Hench said, summarizing results obtained at various clinics throughout the country. If he is not cured, this type of patient has an additional 30 per cent. chance of being markedly relieved with only some remaining stiffness.

"Unfortunately germs supposed by many to cause the common forms of rheumatism (chronic deforming arthritis) are usually resistant to heat and apparently are not killed by the amount of fever which it is safe to induce in human beings," Dr. Hench said.

"The development and poisonousness of these germs may be somewhat hindered, however, and circulation to the joints may be improved; hence, some of these patients with rheumatism also get relief from fever treatments, although not nearly so often as those who have gonorrheal arthritis. It was reported that, of about 315 patients with rheumatism who were treated in various clinics, 5 per cent. had been relieved of their symptoms and 25 per cent. had quite definitely been benefitted."

The idea of fever treatment has become familiar to the public. What actually happens to the body during this treatment may be less familiar. Dr. Hench described it vividly as follows:

"A whirlpool of physical and chemical reactions occurs during the induction of such a 'friendly-fever' in human beings. Blood vessels change their size; the blood, kidney excretion and sweat are altered in their content, and it would seem that the immunity mechanism of the patient is enhanced. The most important discovery is that the germs of gonorrhea and syphilis can actually be killed if enough fever can be generated in the patient."

"While fever therapy in the hands of specially trained physicians and assistants is essentially a safe procedure," he continued, "the reactions must be carefully controlled at all times by attendants. Such treatments cannot therefore yet be said to be cheap, and the day when anyone can turn on his own electric apparatus and cook away his disease in the fires of fever has certainly not now, and probably never will, arrive."

Fever treatment seems quite new. Its present form and usefulness are indeed owing to modern inventions. Actually,

however, the beneficial or curative effect of fever has been known for thousands of centuries.

Almost 2,300 years ago, the Greek physician, Hippocrates, wrote: "Those diseases which medicines do not cure, iron (the knife) cures; those which iron cannot cure, fire cures; and those which fire cannot cure are to be reckoned wholly incurable." For centuries thereafter physicians regarded fever as one of nature's ways of combatting and preventing the spread of disease. Modern physicians owe their revival of interest in fever as a means of treatment to Wagner-Jauregg, an Austrian physician, who noted that when patients who were affected by syphilis of the nervous system accidentally contracted fever of some sort they were often remarkably benefitted. He therefore boldly began to inoculate such patients with malaria and he noticed that in the fires of malarial fever the system was actually often "purified."

Physicians then recalled that, since the sixteenth century, the Japanese had been in the habit of bathing frequently in very hot volcanic water, with apparently curative effects on syphilis and various forms of rheumatism. Thus in the last seven years a "new" and rather amazing form of medical treatment has arisen. In 1928 the press carried dispatches concerning the curious discovery of Dr. W. R. Whitney of the General Electric Company that workers exposed to high frequency radio waves developed fever. Realizing the possible value of this observation to medicine, Whitney and his colleagues developed "radiothermy." Other methods of producing a safe form of fever in human beings have been developed, such as diathermy, the use of special hot baths, and more lately of the heated air-conditioned cabinets elaborated by Charles F. Kettering of the General Motors Corporation.

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●RADIO

Tuesday, June 25, 3:30 p. m., E.S.T.

POISON IVY, By Dr. James F. Couch, Bureau of Animal Industry, U. S. Department of Agriculture.

Tuesday, July 2, 3:30 p. m., E.S.T.

THE PUBLIC HEALTH LABORATORY —ITS VALUE TO MR. AND MRS. CITIZEN, By Dr. Fred O. Tonney, Director, Technical Service and Research, City of Chicago, Board of Health.

In the Science Service series of radio addresses given by eminent scientists over the Columbia Broadcasting System.

OCEANOGRAPHY

Fossil-Bearing Rocks Picked From Cliffs Under the Sea

Period of Rocks Recovered Shows The Crustal Movement Occurred Only 30,000,000 Years Ago

EVIDENCE completely upsetting existing theories about the long geologic period of stability and quiet supposed to have continued unbroken along the North Atlantic seaboard since the Palaeozoic age, 160,000,000 years ago, has been discovered by a joint Harvard University and Woods Hole Oceanographic expedition. This is the first time scientists have succeeded in taking fossil-bearing rocks from the cliffs of the North American continental shelf.

Dredging more than 2,000 feet below the surface of the Atlantic ocean was conducted on Georges Bank, about 120 miles east of Nantucket Island, Massachusetts, under the direction of Henry C. Stetson, research associate in palaeontology at the Harvard University museum of comparative zoology.

Fossils already found indicate that the last major crustal movement of the North Atlantic American coast occurred since the Upper Cretaceous period, 105,000,000 years ago, and possibly since the Miocene age, 30,000,000 years ago, since the valleys are cut in rocks assigned to these periods.

The evidence obtained by the submarine quarrying seems to confirm the generally accepted theory that the deep ocean valleys in the continental shelf were formed by rivers which flowed into the Atlantic before the shelf sank below the ocean. These valleys are now more than 6,000 feet below sea level at their greatest depths on Georges Bank and an upheaval sufficient to lift them above present sea level would have raised the highlands of New England and New York to current Alpine heights. It is also believed that a cliff about 7,000 feet high must have existed along the New England coast at that time.

Many fragments containing fossils have been dredged previously in this area, but no rock had been broken from the sides of these ocean valleys and immediately carried to the surface from exactly known depths previous to this Harvard expedition.

Working from the deck of the Atlantis of the Woods Hole Oceanographic Institute, Mr. Stetson made eleven successful hauls. The middle and upper parts of the valleys between 2100 and 600 feet were found to be the best areas. Here the walls were either steep enough to prevent the deposition of recent sediment or else the mantle was thin enough to be penetrated. The lower parts of the valleys have gentler grades and the fill of debris material covers the bed rock so deeply that no rock was found exposed.

In one of these valleys the expedition dredged at a depth of 1956 to 1578 feet a coarse sandstone containing fossil molluscs, which Dr. Lloyd W. Stephenson, of the United States Geological Survey, has assigned to the Upper Cretaceous period, about 105,000,000 years ago.

Other evidence indicates that Georges Bank is fundamentally an extension of the coastal plain with a covering of glacial debris.

The work is to be continued this summer in the Hudson River submarine channel off New York harbor and in the newly discovered submarine river valleys off the Maryland coast. One of these latter valleys is the deepest yet found along the Atlantic coast, dropping 9,000 feet below sea level.

Science News Letter, June 22, 1935

RADIO

Police Radio Transmitter Viewed By the Camera

See Front Cover

POLICE are not concerned with the beauty of their weapons against the criminal world. But beauty is nevertheless present in the camera view of the hundred-watt radio transmitter for police use depicted on the front cover of this week's SCIENCE NEWS LETTER.

The transmitter was designed by the Bell Laboratories for the Western Electric Company.

Science News Letter, June 22, 1935

Among the rare animals of China are the golden-haired monkey, the blue sheep, and the Chinese red wolf.

•First Glances at New Books

Additional Reviews On Page 408

Physics

THE RISE OF MODERN PHYSICS (2nd ed.)—Henry Crew—*Williams & Wilkins,* 453 p., $4. Publication of the second edition of this popular science history book enables Prof. Crew to make some revisions in the chapter on spectroscopy. It should be pointed out that the author uses the word modern in the title as do the historians who employ it to discuss the period just prior to the Renaissance. The volume is the history of how recent physics came about and who did what to bring it to its present state. Don't look for discussions of the positron, neutron and deuteron (deuton) but enjoy the accounts of the now famous work of generations ago which make them possible.

Science News Letter, June 22, 1935

Fish Culture

TROPICAL FISHES AND HOME AQUARIA —Alfred Morgan — *Scribner's,* 270 p., $2.50. A good treatise on "tropicals," written in terms the beginner can understand, yet complete enough to carry him far into the mysteries of this fascinating hobby, well illustrated with line drawings and halftone plates.

Science News Letter, June 22, 1935

Radio

HOW TO GET BEST SHORT WAVE RECEPTION—M. Harvey Gernsback—*Short Wave Craft,* 72 p., 50c.

Science News Letter, June 22, 1935

General Science

GENERAL SCIENCE—A. B. Regenstein and W. R. Teeters—*Rand McNally,* 674 p., $1.60. A high school text book in general science which seeks to provide students with a broad background of knowledge.

Science News Letter, June 22, 1935

Technology

REPORT ON SIGNIFICANCE OF TESTS OF CONCRETE AND CONCRETE AGGREGATES — *American Society for Testing Materials,* 123 p., $1.25.

Science News Letter, June 22, 1935

Biology

THE NATURE HOUR, Fifth Year—Spring, 125 p., 76c; THE NATURE HOUR, Fifth Year—Autumn and Winter, 128 p., 76c; THE NATURE HOUR, Sixth Year—Spring, 144 p., 80c; THE NATURE HOUR, Sixth Year—Autumn and Winter, 143 p., 80c—Lucille Nicol, Samuel M. Levenson and Teressa Kahn —*Silver, Burdett.* Well-planned nature readers for the fifth and sixth school years. Interspersed with attractive chapters on flowers, trees, animals, rocks, the sun and the soil are appropriate bits of nature verse.

Science News Letter, June 22, 1935

City Planning

HARVARD CITY PLANNING STUDIES, VIII: BUILDING LINES AND RESERVATIONS FOR FUTURE STREETS—Russel Van Nest Black and Mary Hedges Black —*Harvard Univ. Press,* 245 p., $3.50. Of interest to those who may exclaim: "Why wasn't this street wider?" The Harvard University School of City Planning in the course of its broad inquiry into the way cities should grow has gathered exhaustive information on adapting 18th and 19th century street systems to 20th century conditions through some method of remodeling and adjusting old street patterns and old street widths with a minimum of destruction and at reasonable cost.

Science News Letter, June 22, 1935

Chemistry

GENERAL CHEMISTRY FOR COLLEGES; 2d Rev. Ed.—Frederick C. Irwin and G. Ray Sherwood—*Edwards Bros.,* 254 p., $2.50. The authors, who are chemistry professors at Wayne University, admit that there are many excellent chemistry texts on the market but have found, like so many other teachers, that none meet their specific needs. In this book, with a sacrifice in some fields, they have succeeded in creating a text which covers both metals and nonmetals in one semester following one year of high school chemistry.

Science News Letter, June 22, 1935

Physics

THE DILEMMA OF MODERN PHYSICS —Donald Everett Richmond—*Putnam,* 120 p., $2.00. The "Dilemma" in physics, Prof. Richmond points out, is the new evidence that "there is something wavelike about matter and something particle-like about light." In his book the author presents the experimental background which brings about the "Dilemma." Next comes the way out of the "Dilemma" offered by quantum theory and finally the implications of quantum theory in the realm of physical determinism and causality. A minimum of mathematics and non-technical language are used wherever possible.

Science News Letter, June 22, 1935

Biochemistry

ANNUAL REVIEW OF BIOCHEMISTRY, VOL. IV, 1935—Ed. by James Murray Luck—*Annual Review of Biochemistry, Ltd.,* 639 p., $5. For research workers in the field of biochemistry, the appearance of the Annual Review is a looked-for event. The present volume lives up to the reputation attained in the past and summarizes the literature up to January 1, 1935. New branches presented for the first time include the biochemistry of malignant diseases, plant hormones and chlorine and its allied compounds.

Science News Letter, June 22, 1935

Science

EXPLORATIONS AND FIELD-WORK OF THE SMITHSONIAN INSTITUTION IN 1934 —*Smithsonian Institution,* 88 p., Free. Send 10c for handling charges, if secured through Science Service Book Dept. As usual, Smithsonian explorers finish the year with a bookful of experiences, of both interest and importance. The short accounts include Dr. Abbot's report on sun cycles; Dr. Clark's study of butterflies in Virginia; notes from Dr. Graham's diary during his zoological expedition in China; Dr. Roberts' announcement of finding a campsite of Folsom Man; and Dr. Swanton's progress report on tracing De Soto's famous route.

Science News Letter, June 22, 1935

History

HOW OUR CIVILIZATION BEGAN—Mary G. Kelty—*Ginn & Co.,* 375 p., 88c. A beginners' course in civilization, for children. Stressing the gifts which people of the past have contributed to life as we know it today, the author makes six unit studies of the subject. The account runs from the Old Stone Age to the Middle Ages. The book is full of very good pictures, and there are brief exercises and tests following chapters.

Science News Letter, June 22, 1935

Chemistry

ANNUAL SURVEY OF AMERICAN CHEMISTRY, VOL. IX, 1934 — Ed. by Clarence J. West—*Reinhold,* 396 p., $4.50. Summary, by 29 authors, of the chemical literature in the United States during the last year. As in the past, the present volume covers thousands of references and tells just about everything one will need to know in the current chemical literature.

Science News Letter, June 22, 1935

*First Glances at New Books

Additional Reviews On Page 407

General Science

SCIENCE AND THE PUBLIC MIND—Benj. C. Gruenberg — *McGraw-Hill,* 209 p., $2. A valuable compilation of fact and opinion about the dissemination, diffusion, distribution or popularization (whatever it may be called) of science and the various media used. Resulting from conferences and an inquiry under the American Association for Adult Education aided by a grant from the Carnegie Corporation of New York, there are recommendations for future progress and organization.

Science News Letter, June 22, 1935

Archaeology

VOICES FROM THE SILENT CENTURIES —Harry Rimmer—*Wm. B. Eerdmans,* 117 p., $1. Archaeological and other evidence pointing to existence of the New Testament as an authentic record, written long before the fourth century A.D., is arrayed here to confound "cohorts of unbelief."

Science News Letter, June 22, 1935

Ichthyology

FISHES AND THEIR WAYS OF LIFE—Louis Roule—*W. W. Norton,* 320 p., $3.75. A translation by Conrad Elphinstone of a well-liked French work. Although many of the species discussed are strictly Old-World forms, the presence of such chapters of general discussion as "Different Ways of Swimming," and "What Fishes See" make the book very useful as a discussion of the general biology of fishes.

Science News Letter, June 22, 1935

Chemistry

CHEMICAL INDUSTRY'S CONTRIBUTION TO THE NATION—ed. by William Haynes and Edward L. Gordy—*Chemical Industries,* 176 p., paper cover, $1; cloth binding, $2. Collection of valuable historical articles tracing the growth of industrial chemistry. Issued in connection with the celebration of the 300th anniversary of the founding of industrial chemistry in America by John Winthrop.

Science News Letter, June 22, 1935

Geography

THE FIORD REGION OF EAST GREENLAND—Louise A. Boyd—*American Geographical Soc.,* 381 p., 14 plates, $4. An account of one of the world's most interesting regions, hitherto not at all well described. The study has been thorough, the text is well written, and the illustrations are numerous and of excellent quality both scientifically and pictorially. The plates and folded maps in the accompanying portfolio will be found especially valuable.

Science News Letter, June 22, 1935

Anthropology

THE COMING OF MAN, PRE-MAN AND PREHISTORIC MAN—George Grant MacCurdy—*University Society,* 157 p., $1 cloth, 60c paper. A new edition of a handbook containing the boiled-down substance of Prof. MacCurdy's well-known two-volume work on "Human Origins." Its usefulness may be indicated by such aids as 59 well chosen illustrations, charts and tables for ready reference, an index with pronunciations, and suggestions for further reading.

Science News Letter, June 22, 1935

Biochemistry

A TEXTBOOK OF BIOCHEMISTRY—Ed. by Benjamin Harrow and Carl P. Sherwin—*Saunders,* 797 p., $6.00. A comprehensive volume in its field, with thirty authors contributing. Each writer is a specialist in his particular branch of biochemistry. An especially thorough index plus extensive references to the original literature should make this book serve as a model in its field for a long time.

Science News Letter, June 22, 1935

Agriculture-Chemistry

DECLARATION OF DEPENDENCE UPON THE SOIL AND OF THE RIGHT OF SELF-MAINTENANCE—*Dearborn Conference of Agriculture, Industry and Science,* 15c. Copy of the declaration adopted May 7 at Dearborn, Mich., by industrialists, scientists and agriculturists, printed in form suitable for framing.

Science News Letter, June 22, 1935

Ethnology

THE PUEBLO OF SANTO DOMINGO, NEW MEXICO — Leslie A. White — *American Anthropological Association,* 210 p., $2.25. Life in one of the most conservative Pueblo Indian towns analyzed by an ethnologist.

Science News Letter, June 22, 1935

Geography

GEOGRAPHY OF EUROPE — Raoul Blanchard and Raymond E. Crist—*Henry Holt,* 507 p., $3.50. The history of a continent is conditioned largely by the places where its peoples find living desirable or at least possible, the routes by which they move in commerce and in war, the barriers that divide and the open gates that unite them. A survey of these and other factors in the life of Europe, past and present, is here presented by an experienced French geographer, well translated into English.

Science News Letter, June 22, 1935

Astronomy

JAUNTS INTO SPACE—R. S. Underwood — *Christopher Publishing House,* 90 p., $1.25. These "jaunts" are jauntily written, brief, accurate within their scope, and in general calculated to intrigue and entertain as well as instruct readers who would not otherwise "crack a book" on astronomy.

Science News Letter, June 22, 1935

Physics

RADIO PHYSICS COURSE — Alfred A. Ghirardi—*Radio and Technical Publishing Co.,* 972 p., $4.00. The second edition of a popular book which appeared in part in monthly installments in *Radio News Magazine.* It is intended as an elementary text in electricity with applications on the practical sides of radio, and would be a best seller if radio set construction at home were as popular as it once was.

Science News Letter, June 22, 1935

Psychic Research

PSYCHICS AND MEDIUMS—Gertrude Ogden Tubby—*Marshall Jones Co.,* 168 p., $2.00. The author, for seventeen years secretary of the American Society for Psychical Research, has recorded verbatim over 4,000 mediumistic seances. From the mass of material thus collected, she treats in this volume such phases of psychic research as the development of individual mediumship, how to conduct a seance for scientific purposes and the significance of "psychic light."

Science News Letter, June 22, 1935